

Five Creeks

Purpose and Need and Proposed Action



Forest Service
U.S. Department of Agriculture

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Project Location

The USDA Forest Service, Tahoe National Forest (TNF), Truckee Ranger District (TKRD) proposes to complete forest restoration, fuels reduction, and habitat enhancement treatments on approximately 6,151 acres along the California State Route (SR) 89 corridor South of Truckee, CA. All work would occur on National Forest System land.

The Five Creeks project area aligns with the Truckee River and the SR 89 corridor, South of the town of Truckee and North of Olympic Valley, approximately five miles northwest of Lake Tahoe. Ranging in elevation from 5,800 to 8,000 feet, the project area includes five creeks and their tributaries; Silver, Deep, Pole, Brush and Cabin Creeks, which flow into the Truckee River (see Figure 1).

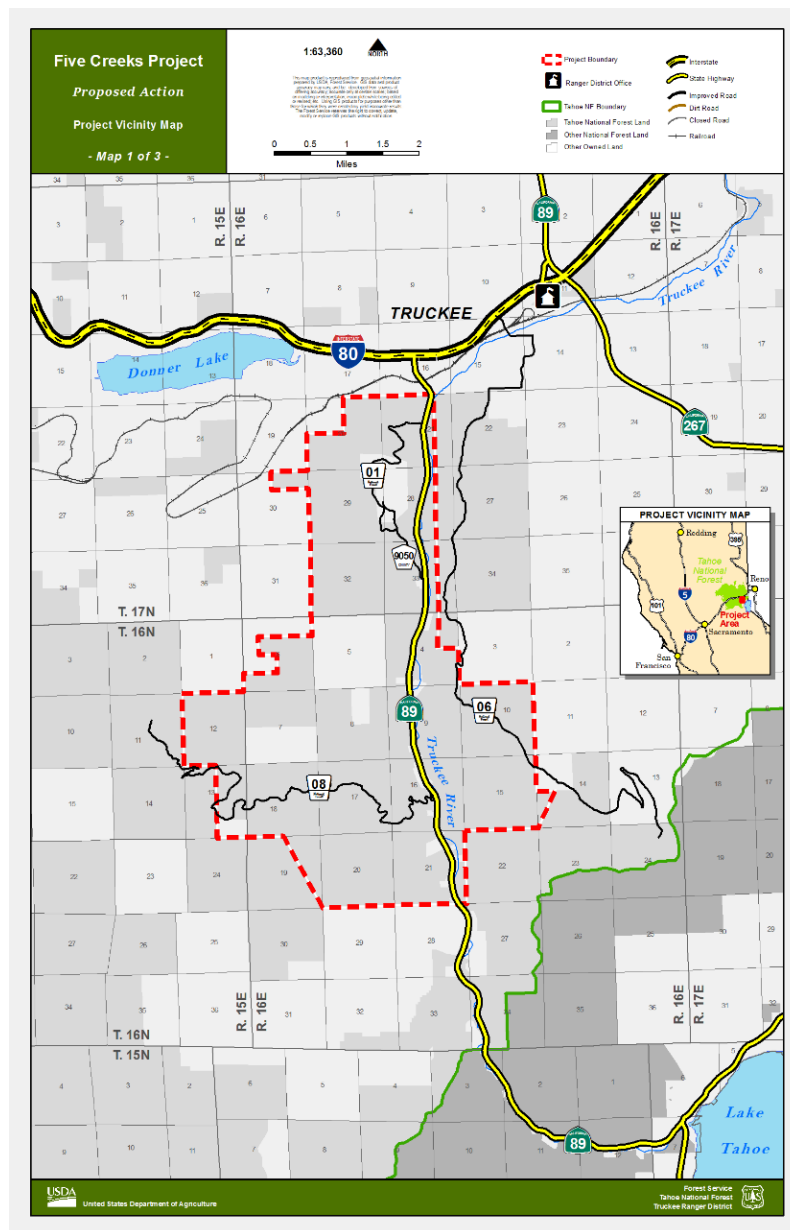


Figure 1: Vicinity map showing the Five Creeks Project area.

Need for the Proposal

The Five Creeks project area is a high use area adjacent to the Town of Truckee along the Truckee River/ SR 89 corridor. The project area experiences significant visitation and contains critical infrastructure including developed campgrounds, private residences, recreation residences, transmission lines, the Placer County Eastern Regional Landfill, mountain biking, hiking, and fishing trails, rock climbing destinations, and vehicles traveling from Interstate 80 to Lake Tahoe. Due to the high use nature of the area, its proximity to urban areas, the potential for high severity fire, and forest health issues, treatment is necessary to promote safe conditions while maintaining and enhancing the ecosystem services provided by the area.

The Tahoe National Forest Land and Resource Management Plan (USDA Forest Service, 1990) as amended by the Sierra Nevada Forest Plan Amendment Record of Decision (SNFPA ROD, USDA Forest Service, 2004) provides the foundation for the purpose of the Project. The project area is entirely within the Wildland Urban Intermix (WUI) with two designations: Defense Zone and Threat Zone. Action is needed to mitigate the risk to life and property within the project area by managing hazardous fuels within these zones. This need aligns with Forest Plan direction to reduce threats to communities and wildlife habitat from large, severe wildfires (SNFPA ROD, pp. 8, 34, and 44 - 48).

While protecting life and property are the primary focus of this project, the aim is to do so while improving and restoring ecosystem function and increasing resiliency to the effects of environmental stressors including drought, wildfire, insects, and diseases, and fostering ecosystem capacity to adapt to future climate conditions.

Past harvest practices and the legacy of fire suppression in the Project area have influenced forest structure and composition, leading to unsustainably high tree densities and increased homogeneity in species and age-class structure. Forests have shifted from being dominated by fire-adapted, resilient conifer species (i.e., Jeffrey pine) to forests dominated by species vulnerable to the effects of wildfire and drought (i.e., white fir). Fire exclusion practices have given white fir a competitive edge and increased its representation over historic levels across all forest and habitat types. Historically the forest mosaic was maintained by a frequent, low-to-mixed-severity fire regime. Wildfire has largely been absent from the project area for over 100 years, with the last recorded fire in 1949 that affected only 3% of the project area.

Current forest structure has intensified the vulnerability of conifers to an array of density-related disturbances such as drought, insects, disease, high-severity wildfire, and climate change. These conditions facilitate the risk of wildfire rapidly moving from the forest floor to the crowns of trees and spread between canopies making it hard or impossible to control. Crown fires can lead to human fatalities, destruction of property, tree mortality, and habitat loss among many other undesirable outcomes. Action is needed to improve the resiliency of forested communities to environmental stressors by reducing conifer stand density and increasing heterogeneity in species composition and age-class structure.

Various wildlife species are dependent on forests that maintain mature forest structures for denning or nesting. These forests are complex with dense patches of forest that include large live and dead trees as well as a complex understory with large down logs, shrubs and herbaceous vegetation. However, mature forests have also been affected by fire exclusion: the resulting high concentrations of fuels and increasing conifer densities threaten their persistence on the landscape. Of particular concern is habitat for the California spotted owl and northern goshawk,

Forest Service sensitive species that are associated with mature forest conditions. Action is needed to maintain existing suitable habitats while improving their resiliency to high severity fire and other severe disturbances as well as mitigate hazardous fuels within both California spotted owl (CSO) and northern goshawk (NOGO) protected activity centers (PACs) and CSO territories. Given existing high fuel loading and forest stand densities in the Project area's CSO PACs and territories and NOGO PACs, there is a need to amend the Forest Plan (36 CFR 219.13 (b)(1)) to allow for management actions designed to reduce the risk of habitat loss in these areas from wildfire, drought, insects, and diseases.

Reducing the potential for adverse impacts to water quality and improving the physical and biological aspects of riparian, meadow, wetland, and aquatic habitat through fuels reduction is critical throughout the project area. A recovery population of Lahontan Cutthroat Trout, a federally list species, is present in Pole Creek. Management decisions and actions within the Pole Creek Riparian Conservation Area (RCA) will reflect the unique and important nature of the aquatic and riparian resources. Conservation recommendations will be discussed in the corresponding species portions of the Biological Evaluation/Biological Assessment prior to final decision documents. Overall goals are to protect and enhance habitat in streams containing pure strains of Lahontan cutthroat trout and to maintain and improve habitat conditions for all resident salmonoids and aquatic species.

Recognizing that fire was a key landscape process that shaped forest patterns at stand and landscape scales, fire plays a critical role in maintaining ecosystem function. Action is needed to re-introduce fire as a process. Utilizing prescribed fire on the landscape is an effective way to reduce surface fuels, and help restore and maintain ecosystem structure, composition, and function.

Invasive plants pose a serious threat to ecosystem function in forest, aspen, riparian and aquatic communities. Invasive plants displace native species, reduce habitat suitability, alter nutrient and fire cycles, decrease the availability of forage for wildlife, degrade soil structure, and reduce overall biodiversity. Multiple infestations of five non-native invasive plant species including tall white top, spotted knapweed, reed canary grass, Russian knapweed and musk thistle are present within the project area. There is a need to control non-native invasive species infestations within the project area and prevent their further spread.

An effective transportation network that minimizes resource damage and protects against high runoff events is needed for both public use and land management activities. Constructing new or temporary roads is needed to facilitate short-term access to treatment areas and facilitate forest product removal. There is also a need to increase the resiliency of existing roads to high runoff events through maintenance or rehabilitation.

Management Objectives

The project area is entirely within Wildland Urban Interface with two designations: defense zone and threat zone. Defense zones generally reside within 0.25 mile of developed infrastructure and threat zones extend an additional 1.25 mile past the defense zone. The project area also includes approximately 300 acres of lands designated as urban core which is defined as an area with at least one home per five acres. The management objectives for forests closest to the urban core and the WUI defense zone are to create or maintain an open forest structure, dominated by larger,

fire tolerant trees. The openness and discontinuity of crown fuels, both horizontally and vertically, would result in a very low probability of sustained crown fire (see Figure 2, left photo).



Figure 2: Left photo represents forest stand structure in line with the desired conditions in the WUI defense zone where the right photo represents the desired condition within the WUI threat zone.

Within the WUI threat zone, the objectives are to establish and maintain a pattern of area treatments that are effective in modifying wildfire behavior while maintaining or enhancing ecosystem services. Tree density would be reduced to a level consistent with the site's ability to sustain forest health during drought conditions and stand heterogeneity in both the overstory trees and understory vegetation would be enhanced through variable density thinning (see Figure 2, right photo).

Four CSO PACs and four NOGO PACs exist in the Five Creeks project area, all of which fall within WUI designations. Late seral closed canopy forest makes up a small portion of the existing PACs, between 6% and 19% of the existing 300 acres. Maintaining this habitat and bolstering its development is critical to the owls continued survival in the project area.

Within PACs, treatments would minimize near-term impacts to reproductive California spotted owls, reproductive northern goshawks, and known nest sites, and maintain and promote the highest quality nesting and roosting habitat while considering opportunities to increase resilience of the PAC to severe disturbances. If surveys indicate that the PAC is occupied by a pair of CSO or NOGO and highest quality nesting and roosting habitat is lacking, treatments would be designed to maintain or improve the best available nesting and roosting habitat in the PAC. Within CSO territories, the goal is to retain existing suitable habitat, accelerate development of currently unsuitable habitat, and treat fuels using a landscape approach to improve habitat resiliency to environmental conditions. When present, treatments would maintain and promote



Figure 3: Photo of a late seral habitat feature desirable to maintain within PACs and CSO territories.

the highest quality nesting and roosting habitat, while considering opportunities to increase resilience (see Figure 3).

Forest Plan Amendment

This project proposes a project specific plan amendment to the Tahoe National Forest Land and Resource Management Plan (LRMP 1990) as amended by the Sierra Nevada Forest Plan Amendment Record of Decision (SNFPA ROD 2004). The SNFPA specifies that limited treatment is permissible in PACs only when necessary to meet fuels objectives. However, the plan does not allow for treatments aimed at improving habitat resiliency, promoting fire resilient conifers, or encouraging growth of large diameter trees. The Conservation Strategy for the California Spotted Owl in the Sierra Nevada (USDA Forest Service 2019 is referred to as the Conservation Strategy). The Conservation Strategy recognizes the need to incorporate habitat restoration actions to maintain suitable habitat in the face of climate change and increasing high severity wildfire risk. The preliminary identification of the need to change the Forest Plan (36 CFR 219.13 (b)(1)) is driven by the goals of this Project combined with a need to perform treatments beyond fuels reduction to address habitat resiliency in the four Five Creeks PACs and territories. This project proposes adopting strategies to improve habitat resiliency while meeting the WUI fuels objectives.

The proposed project-specific amendments to the *Tahoe National Forest Land and Resource Management Plan* (LRMP 1990) as amended by the *Sierra Nevada Forest Plan Amendment Record of Decision* (SNFPA ROD 2004) are based on the Conservation Strategy. The Conservation Strategy provides updated management recommendations, based on best available science, that focus on maintaining high-quality spotted owl habitat while increasing habitat resiliency across landscapes.

Proposed changes includes modifying, removing and adding specific forest plan components to: (1) protect California spotted owl PACs by enhancing their resilience to severe disturbances, thereby providing for their long-term sustainability on the Landscape; (2) replace California spotted owl home range core areas (HRCAs) designation with the concept of territories as defined in the Conservation Strategy; (3) address needs for enhancing habitat resiliency in CSO territories; and (4) balance needs for protecting PACs with protecting public and firefighter safety and reducing fire hazards near communities. The proposed forest plan amendments, as detailed in Appendix B, would apply only to the Five Creeks project. The proposed project-specific amendments would be evaluated during environmental analysis to assess their efficacy in meeting project objectives.

Substantive Provisions Directly Related to the Proposed Amendments

In accordance with 36 CFR 219.13, the Responsible Official has determined the following specific substantive requirement(s) within §§219.8 through 219.11 are directly related to the plan direction being added, modified, or removed by the proposed amendments (Appendix B): 36 CFR 219.8(a)(1): Sustainability, (a) Ecological sustainability. (1) Ecosystem Integrity 36 CFR 219.9(a)(1) and (2) and (b): Diversity of Plant and Animal Communities, (a) Ecosystem plan components, (1) Ecosystem integrity and (2) Ecosystem diversity and (b) Additional Species-Specific Plan Components 36 CFR 219.10(a)(1), (5), (7), and (8): Multiple Use, (a) Integrated resource management for multiple use, (1) Aesthetic values, cultural and heritage resources, ecosystem services, fish and wildlife species, forage, geologic features, grazing and rangelands,

habitat and habitat connectivity, recreation settings and opportunities, riparian areas, scenery, soil, surface and subsurface water quality, timber, trails, vegetation, viewsheds, and other relevant resources and uses; (5) Habitat conditions, subject to the requirements of §219.9, for wildlife, fish, and plants commonly enjoyed and used by the public; for hunting, fishing, trapping, gathering, observing, subsistence, and other activities (in collaboration with federally recognized Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments); (7) Reasonably foreseeable risks to ecological, social, and economic sustainability; and (8) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of the terrestrial and aquatic ecosystems on the plan area to adapt to change (§219.8).

Proposed Action

The Forest Service proposes to conduct vegetation treatments, fuels reduction, prescribed burning, habitat enhancement, and road management treatments on approximately 6,151 acres of the Tahoe National Forest Truckee Ranger District. Vegetation treatments would rely on mechanized treatment methods in most areas, although hand thinning would be conducted in sensitive or difficult to access areas or as a follow-up treatment. All vegetation treatments would retain live conifers 30 inches diameter at breast height (dbh) or larger, except where incidental removal is needed for safety and equipment operability. Whole-tree yarding, or “cut-to-length” systems may be utilized, and conventional ground-based harvesting equipment would be used on sustained slopes less than 30 percent. Removal of harvested material on slopes greater than 30 percent would require special precautions to meet soil quality standards and control erosion. Such precautions include the use of tethered operations that use a synchronized cable winch system, aerial logging systems including but not limited to helicopter and cable yarding, and special contract provisions that require excavator type equipment to recontour and drain impacted areas. Follow-up hand treatment, mastication, chipping, machine piling or prescribed fire would be used as a follow-up treatment to meet fuels objections or to thin non-merchantable trees. Hand treatments include felling trees less than 12 inches dbh, lopping and scattering (where pile burning is restricted), piling and later burning, or chipping. Activity generated landing slash would be machine piled and burned or chipped and hauled to a biomass facility. The vegetation would be removed as sawlogs and biomass, using a timber sale, service contract, force account (Forest Service personnel), stewardship contract, stewardship agreement, or by public fuelwood opportunities. To reduce the impact of the pathogenic fungus, *heterobasidion spp.*, stumps greater than 14 inches in diameter and more than 200 feet from water will be treated with sodium tetraborate decahydrate (commonly known as borax) at a rate of one pound per 50 square feet treated within four hours of the tree being cut. Table 1 summarizes the proposed project activities.

Table 1: Five Creeks proposed treatment activities

	Treatment prescription	Total Acres*	Defense Zone	Threat Zone
Forest Restoration and Fuels Reduction (4,414 acres)	Mechanical thinning	3,470	1,003	2,467
	Mechanical thinning (greater than 30% slopes)	414	90	324
	Plantation mechanical thinning	272	272	0
	Biomass mechanical and hand thinning	240	143	97
	Machine piling and pile burning (greater than 30% slopes)	549	177	372
	Lop and Scatter	93	35	58
	Prescribed fire	4,414	1,508	2,906
	Thinning along stream courses	**		
Habitat Enhancement (~2,070 acres)	PAC thinning (CSO/NOGO)	2,070	930	1,140
	California spotted territories	**		
	Aspen and riparian hardwoods	**		
	Meadow enhancement	**		

*Note: Acreages within this table exceed the total acreage of the project area (6,151) because of treatment overlap. Acres are estimates based on preliminary field review.

**To ensure the highest level of accuracy CSO territories would be mapped using site specific vegetation data for the project area. Aspen, riparian hardwoods and meadows would be delineated and mapped prior to implementation based on site specific field data.

Forest Restoration and Fuels Reduction

In both WUI threat and defense zones, the proposed action would employ an uneven-aged thinning technique called variable density thinning (VDT). This technique improves forest health by creating a more resilient forest structure and mitigates hazardous fuels by reducing stand density and breaking up the canopy. VDT is designed to produce a mosaic of individual trees, clumps of trees, and small openings to enhance stand resilience to severe disturbances, create structural heterogeneity, and foster development of diverse tree species. Variable density thinning objectives for this Project include reducing stand density, reducing ladder fuels, preparing stands for the safe reintroduction of fire, enhancing species composition, increasing stand structural heterogeneity, and accelerating growth of mid-seral forests toward late seral conditions (see Table 2).

There are three main elements to VDT thinning: Gaps, Clumps and Matrix. Gaps are areas 0.1 to 3 acres in size where conifers less than 30-inch dbh are removed except for healthy overstory pine and may make up approximately 10 to 20% of the project area. Gaps greater than 0.5 acre in size may be planted to assist natural regeneration of pine species (i.e. Jeffrey pine and sugar pine). To promote seedling survival and growth site prep and seedling release may be required where shrubs are competing with seedlings. Where needed upon initial planting or as a follow-up release

treatment shrub treatment may include any combination of manual grubbing a 5-foot radius from the seedling, localized hand application of herbicide using glyphosate or triclopyr, or other mechanized methods such as mastication.

Clumps are groupings of trees where thinning is generally avoided. Within these clumps some thinning may occur but a multi-tiered canopy with interlocking crowns are desired. Clumps would include dense pockets of trees 0.1 to 0.25 acre in size and up to 5% of the project area.

The matrix area would make up most of the forest outside of gaps and clumps. Within the matrix trees would be thinned down to an average residual density of 80 to 110 square feet of basal area (BA) within the Jeffrey pine ecosystem, and 140 to 170 BA within the sub-alpine/ red fir forests. Generally, conditions in the matrix reflect the natural range of variation which encourage fire resilient pine species, larger diameter trees, and more open conditions. Trees should generally be healthy and vigorous with full green crowns and free of pests and pathogens. Spacing between trees would vary within the stand to mimic historic conditions and promote conditions favorable to low severity wildfire.

Table 2: Summary of VDT treatment objectives and how they would be applied in each WUI zone.

VDT Element	Defense Zone	Threat Zone
Gaps 0.1 to 3 acres in size	Objective: Breakup canopy fuels, reduce presence of pathogens and promote and restore pine regeneration. 1. Remove conifers less than 30-inch dbh except where healthy overstory pine are present. 2. Plant gaps greater than 0.5 acre in size with fire resilient species. 3. Place where conifer pests or pathogens are affecting forest health.	Objective: Promote understory vegetation and promote or restore pine regeneration. 1. Remove conifers less than 30-inch dbh except where healthy overstory pine are present. 2. Expand existing openings where understory vegetation is present 3. Plant gaps larger than 0.5 acre in size with fire resilient species 4. Expand areas where natural pine regeneration is present
Clumps 0.1 to 0.25 acre in size	Objective: Promote stand heterogeneity without compromising defensible space. 1. Retain groupings of large diameter trees (greater than 30-inch dbh). 2. Retain patches of large diameter snags (greater than 15-inch dbh). In areas where they do not compromise defensibility.	Objective: Promote stand heterogeneity. 1. Retain groupings of trees with interlocking crowns. 2. Retain patches of snags or groupings of large down logs (greater than 12-inch dbh). 3. Retain areas with multi-tiered canopy. 4. Retain areas that may function as thermal and/or hiding cover for wildlife or screening for aesthetic purposes.
Matrix	Objective: Reduce ladder and surface fuels, the presence of conifer pests and pathogens and promote fire resistant species. 1. Utilize topographic position, aspect, elevation, and species composition to determine tree density. 2. Reduce BA to average 80-110 within Jeffrey pine and 140-170 in subalpine red fir forests	Objective: Promote stand heterogeneity and fire resistant species while maintaining late seral habitat features where present. 1. Utilize topographic position, aspect, elevation, species composition to determine tree density 2. Maintain healthy forests which are resilient to pests, pathogens, drought, and climate change 3. Retain areas of smaller vigorously growing trees. 4. Promote understory vegetation and diversity

Defense zone

Vegetation and fuels treatments in WUI defense zones would be designed to create defensible space around communities and provide safe and effective areas for suppressing wildfire. Forest stands in these areas would be thinned using VDT methods to break up crown continuity and reduce ladder fuels minimizing the possibility of supporting a sustained crown fire through the stand. Ladder fuels would be thinned away from the base of residual trees (up to 25 feet) to reduce the risk of surface fire from moving into the crowns of adjacent trees.

Treatment of surface and ladder fuels would be accomplished as either the primary treatment or as a follow-up to another type of treatment, such as a timber sale. As a primary treatment the existing surface or ladder fuels would be reduced through mechanized equipment (i.e., mastication, mechanized thinning of biomass or machine piling of surface fuels) and in most cases these treatments would be followed by pile burning or broadcast burning. As a secondary treatment project generated slash or surface fuels left behind after a timber sale would be reduced by means of mechanized equipment as stated above, through broadcast burning, or both. In stands where overstory trees do not need to be thinned, mechanized equipment would be the primary means to treat ladder fuels. Biomass could be chipped and hauled, treated through commercial fuel wood sales or brought to landings and burned or hauled.

To sustain defensible space overtime periodic maintenance treatments would be implemented as needed to address regrowth of shrubs and small trees after the initial treatment phases. To alleviate the need for periodic maintenance, treatments along the SR 89 corridor and within 150 feet of private residences and property boundaries, sprouting shrubs may be treated with Triclopyr using a backpack sprayer or cut-stump methodology. Residual trees within 100 feet of infrastructure and property boundaries may be pruned up to six feet in height or 50% of total tree height, whichever is less.

Threat zones

Variable density thinning with gap and clump creation would move forest density, structure, and composition, toward the natural range of variation and reduce the likelihood of high severity active crown fires (Safford et al 2019). Density of trees would vary based on the microsite including topographic position, aspect, elevation, species composition, etc. Within cooler north and east-facing slopes and along valley bottoms, forests would be left denser. Along ridgelines and hotter south and west facing slopes forests would be thinned more aggressively. Higher elevation sub-alpine forests with higher compositions of red fir would be thinned less aggressively. Trees of any diameter less than 30-inches dbh may be thinned to meet desired forest structure, composition, and conditions. Thinning would focus on the removal of smaller diameter trees and the vast majority of removed individuals would be less than 20 inches dbh.

Plantations

Conifer plantations would be thinned to enhance conifer vigor, reduce the potential for shrubs to act as ladder fuels, and increase heterogeneity in species composition and stand structure. Treatments within plantations which are of merchantable size (greater than 10 inches dbh) will follow “Forest Restoration” treatment prescriptions as described above. Sub-merchantable plantations (less than 10 inches dbh) will be thinned to a spacing ranging from 15 to 30 feet depending on the condition of the plantation. Plantation treatments would follow the guidelines described below.

- Favor retaining the most vigorous, largest trees
- Favor retaining pine and other fire adapted species over fir
- No gap creation or clump retention would occur
- Understory shrubs would be masticated
- Pruning may occur to reduce mortality from prescribed fire

Prescribed Fire

Prescribed fire treatments would be utilized to reduce and remove fuel loads, to alter the vertical fuel profile throughout the project area, and to reintroduce fire to the project landscape. Different types of prescribed fire may be used as stand-alone treatments or in phases, working toward the desired fuels conditions. Implementation of prescribed fire would include pile burning, jackpot/spot burning and understory burning (underburning).

Pile burning would remove fuels created from prior treatments that target thinned vegetation (inclusive of generated activity fuels) as well as existing surface fuels; piles are made mechanically or manually by hand. Pile location and size would be based on existing conditions; however, piles would be preferentially placed outside sensitive areas, such as riparian areas and cultural resource sites. Piles are typically burned under fall-like conditions, in winter months, or during periods of low fire danger.

Jackpot or spot burning would reduce surface and ladder fuels by igniting concentrations of fuels or to break up fuel continuity throughout a treatment area, thereby creating a mosaic burn pattern. Jackpot/spot burning may be used as an initial treatment or as follow up treatment, and functions toward re-introducing fire to the landscape.

Understory burning, or underburning, applies a surface fire that burns live and dead fuels at or near the surface of the ground, mostly by flaming combustion. Underburning is typically the last phase of treatments that allows for the broader re-introduction of fire across the project landscape.

Prescribed fire would be applied on up to approximately 75 to 100% of the project area. Prescribed fire implementation would be focused on silviculture and fuels treatment units and may include areas not receiving silvicultural treatments (such as riparian areas and natural openings) that may function as natural fire breaks or may benefit from having fire re-introduced to them. Coordination would occur with resource specialists ahead of implementing prescribed fire treatments throughout the project area to ensure resource protection measures are met.

Habitat Enhancement

PACs and Territories

Conservation and enhancement of habitat and habitat elements is the primary focus within CSO and NOGO PACs and CSO territories. Conservation of habitat includes actions that retain late seral habitat while increasing their resiliency to environmental factors such as wildfire and climate change. This objective must be balanced with the need to reduce the risk of high severity wildfire to the surrounding communities as all the PACs fall within the Five Creeks WUI.

PAC treatments would be site specific and designed to maximize or restore the habitat value that exists. CSO territories would be drawn following the guidelines provided in the Conservation Strategy. Territories would be mapped using the most up-to-date vegetation data and maximize the inclusion of the best available habitat. The proposed action map in Appendix A displays the

estimated 1000-acre circular territory for three of the four CSO territories. The northern most territory is not estimated because it lacks a known activity center. Further surveys are needed to determine if the territory becomes active or if retirement of the PAC is prudent. Based on the existing condition, three designations would drive site treatments in PACs and CSO territories: 1) nest and roost sites, 2) habitat maintenance thinning, and 3) habitat resiliency thinning. Table 3 summarizes the designations and their associated treatment.

Table 3: Treatment designations within PACs and CSO territories.

	Nest and Roost Sites	Habitat Maintenance Thinning	Habitat Resiliency Thinning PACs	Habitat Resiliency Thinning Territories
Description	All known nest and roost sites plus a 10-acre area around them	Existing Late seral habitat CWHR 5,6 MD within both 300-acre PACs and 700-acre territories	Suitable habitat (CWHR 4 MD) 300 -acre PACs	Suitable habitat (CWHR 4 MD) 700-acre territories
Prescription	Leave Island	Modified VDT –includes clumps** and matrix (no gaps or pine regeneration thinning)	VDT thinning –clumps**, matrix, pine regeneration thinning (less than 100 acres)	VDT thinning – gaps, clumps, matrix
Treatment	None	Biomass removal only (less than 12-inch dbh conifer removal) either mechanical or hand thinning	Mechanized thinning underburn	Mechanized thinning underburn
Method	n/a	Combination of both manual and mechanical thinning methods based on accessibility and slope.	Mechanical thinning, piling, prescribed burning	Mechanical thinning, piling, prescribed burning

* CWHR – California Wildlife Habitat Relationship codes: 4=average tree size small (11-23.9 inches DBH); 5=average tree size medium to large (24.0 inches DBH and larger); 6=multi layered size 5 over size 4 or 3 (pole size trees 6-10.9 inches DBH); M=canopy cover 40-59 percent class; D=canopy cover 60-100 percent class.

**Clumps would be minimized where PACs and territories overlap WUI defense zones.

Treatment Design Criteria by designation

All treatments would minimize disturbance to breeding owls using limited operating periods where treatments would occur outside of the breeding season. All treatments maintain existing large trees by retaining all conifers greater than 30-inch dbh and all pine greater than 24 inches dbh. To protect and retain snags and down logs all medium to large (greater than 12-inch dbh) snags and down logs would be retained within the limits of operability and safety. Clumps may be placed in areas with higher densities of larger snags (greater than 15-inch dbh) and down logs (greater than 12-inch diameter) to protect them during operations. To promote snag recruitment defect trees greater than 24 inches dbh would be retained, and broadcast burning would be utilized to revitalize understory vegetation such as shrubs and forbs that prey species depend on and reduce flashy surface fuel loading that can promote fire t species all pine species greater than 24 inches dbh would be retained.

This project aspires to utilize prescribed fire throughout the project area, including in PACs and territories. Underburning can mimic the effects of natural fire regimes and promote important habitat features such as understory shrubs and the creation of snags and down logs. Plans for underburning within PACs and territories would be designed to minimize effects to existing habitat features such as large snags, down logs, and clumps.

Pile burning would remove activity generated fuels, piles are made mechanically or manually by hand. Pile location and size would be based on existing conditions; however, piles would be

placed outside of nest and roost cores and clumps. Piles are typically burned under fall-like conditions, in winter months, or during periods of low fire danger.

Nest core – No habitat manipulation would occur within 10 acres surrounding the most recent known nest sites.

Habitat Maintenance Thinning – Habitat Maintenance thinning is designed to bolster the resiliency of existing high-quality late seral closed canopy habitat (CWHR 5M, D and 6) to high severity wildfire by focusing on reducing ladder fuels as it occurs in both PACs and the CSO territories. Ladder fuels less than 12 inches dbh would be reduced using a modified VDT prescription. The VDT prescription would allow for the retention of clumps or patches of smaller trees but would not include gaps or pine regeneration thinning. Within PACS these areas would encompass or connect roosts and nest trees, creating corridors of high-quality habitat. The existing canopy cover in these areas would be maintained. Mechanical and or hand thinning techniques would be used with follow-up prescribed burning. Prescribed burning would be designed to minimize effects to large snags and down logs.

Where late seral closed canopy habitat exists within the PACs and overlaps the WUI defense zone the prescription would differ from the above description for clumps and patches of smaller diameter trees. In the defense zone these trees would be thinned to maximize the reduction of ladder fuels. The current spatial overlap of WUI defense zones ranges from 4 to 53 percent of the current four PACs (see Appendix A maps).

Habitat Resiliency Thinning – Within PACs and territories a VDT prescription would focus on developing late seral habitat features outside of late seral closed canopy habitat (CWHR 5 and 6D), while promoting fire resilient conifers and encouraging their regeneration. VDT thinning in PACs would include clumps and matrix thinning without gaps. However, a lower basal area retention (80 to 110 BA square feet/acre) would occur where healthy overstory pine are present to enable natural regeneration. Thinning in these pine regeneration areas would focus on removal of fire intolerant species such as white fir. Pine regeneration thinning areas would vary based on the existing condition and availability of overstory pine but would be limited to no more than 100 acres of the PAC area.

Within territories VDT thinning gaps would be placed in areas to enhance existing openings, promote shrubs or understory vegetation and or to promote pine regeneration. Variability within matrix thinning areas would be implemented on the micro-site, with denser sections and clumps mixed in with more heavily thinned areas where pine overstory exists but should average between 140 to 180 square feet of BA across the stand. Density of trees will vary based on the microsite including topographic position, aspect, elevation, species composition, etc. Jeffrey pine, sugar pine and other fire adapted species over would be retained over fire intolerant species such as white fir. To promote vertical heterogeneity and age class diversity areas of smaller vigorously growing trees, where they do not function as ladder fuels, would be retained. Clumps would include dense pockets of trees from 0.1 to 0.25 acre in size with interlocking crowns. Tree clumps would be placed to protect existing late seral habitat features such as large down logs, large snags, or groups of large diameter trees (greater than 30 inches dbh). Conifer groups would be retained where trees are growing within a narrow distance of each other. Tree groups may be of mixed size where the dominant trees greater than 24 inches. The exception is where healthy pine species are growing in a group of fir species and it is desirable to open the pine for growth and seed recruitment.

Where PACs and territories overlap the WUI defense zone the prescription would differ from the above description for clumps and patches of smaller diameter trees. In the defense zone these trees would be thinned to maximize the reduction of ladder fuels (see Appendix A maps).

Riparian Conservation Areas

All actions planned within Riparian Conservation Areas (RCAs) are designed to meet the intent of the Riparian Conservation Objectives directed at the protection and enhancement of RCAs in the Forest Plan (SNFPA 2004, ROD, Appendix A pages 32-34). The project area includes approximately 13 miles of perennial streams, over 35 miles of ephemeral streams, 14 miles of intermittent streams, 70 meadows or wetlands (330 acres total), and 1 fen. Many of these aquatic features would be enhanced through a series of actions that include thinning conifers and actions designed to restore hydrologic function. Proposed actions aimed at mitigating effects from roads, crossings and culverts are described in the Roads Management section on page 17.

Proposed actions would minimize disturbance of riparian vegetation and soils by following site specific RCA resource protection measures and Lahontan Water Quality Control Board regulations that would include restrictions to ground disturbing activities within buffer zones (e.g., end lining to minimize disturbance to soils, restrictions on turning equipment, skid trail placement, vegetation and soils protection measures, and low-intensity underburning). Site specific resource protection measures would be developed collaboratively between implementation staff and hydrologists or other aquatics specialists.

Along stream courses that fall within treatment areas conifer density would be reduced to mitigate hazardous fuel accumulations and improve growing conditions for riparian vegetation and to enhance aquatic habitat. Conifers would be thinned to a density equivalent to the surrounding forest and conifer retention would focus on the largest conifers and snags to promote large wood recruitment.

Meadows

Approximately 330 acres of dry and wet meadow habitat have been identified in the project area. To increase the extent of these meadows and improve their overall function, encroaching conifers would be removed via a combination of hand thinning, hand piling and burn, lop and scatter, dry season mechanical treatment, over snow mechanical treatment, and/or prescribed fire. Integrated design features would minimize disturbance to soils and reduce rutting or other damage to the meadow area during implementation.

Meadows would be delineated prior to implementation based on riparian vegetation, topography, and soil characteristics. Most conifers less than 30 inches dbh would be removed throughout the delineated recoverable meadow area. Some conifers would be retained to promote geomorphic function and dynamism of streams within the meadow areas. Between 5 to 10 percent canopy cover of conifers would be retained where they may contribute to the long-term recruitment of wood. Conifers that meet the following criteria would be preferentially retained: located where they would fall into the stream, have fire scars, are near old stumps/snags/logs, are not shading riparian hardwoods, and the largest trees in the area. Snags would also be retained within the meadow area, within the limits of safety and operability. Directional placement of trees would occur in reaches deemed deficient in coarse woody debris or where placement of wood would enhance stream bed and bank stability as identified and directed by a watershed or aquatics specialist.

Dry season mechanical tree removal would occur within the meadow area where soils are dry to 10 inches. Over-snow mechanical tree removal would only occur when snow conditions and depth are sufficient protect soils from compaction. Where mechanical treatment is not feasible due to soil conditions, hand thinning conifers would be applied. Boles greater than 10 inches dbh would be felled and left within the meadow as large down woody debris. Boles less than 10 inches dbh would be bucked, hand carried, and hand piled outside the wet meadow area where piles may be burned in areas of the wet meadow. Piled material resulting from the conifer removal, would be burned.

Underburning and hand thinning and lopping within meadows would be considered as a secondary treatment to reduce conifer regeneration, promote herbaceous vegetation, and reduce fuels. Underburning or hand treatments in meadows would occur as a maintenance strategy to control future conifer regeneration. Underburning would take place after mechanical and hand treatments and timed to allow for the break-down of project generated fuels. Underburning would occur in the fall, when meadow grasses are dry enough to allow for fire to carry.

Fences, large boulders or other structures would be strategically placed in some areas to protect meadows and vernal pools from damage caused by unauthorized motor vehicles.

Within fens conifers smaller than 30-inch dbh would be treated using non-mechanized techniques. Conifers would be either hand thinned and piled outside of the fen, lopped, and scattered, dropped and left as down logs, girdled or left standing. Some conifers may be directionally dropped perpendicular to channels to slow erosive forces leading to down cutting or further channelization.

A series of hydrologic restoration actions would take place in meadows, wetlands, and streams within the project area. The following actions would include both hand work and mechanical treatments designed to restore hydrologic connectivity and processes.

- Reconnection of stream channels disrupted by legacy features (e.g., roads).
- Restoration of ephemeral and intermittent stream channels to encourage groundwater recharge and improve habitat.
- Blocking of meadow and wetland features from vehicle access

Aspen and Riparian Hardwoods

Conifers growing or encroaching into areas with aspen, cottonwood, willow, or alder species would be reduced to increase sunlight and water availability. Conifer removal would be focused where they directly overtop the aspen or riparian hardwoods and within a distance up to 100 feet of the most distal aspen or riparian hardwood stem. Conifers uphill or to the south of aspen may be removed up to 125 feet, however, this zone may be reduced depending on local site conditions.

Conifers less than 30-inches dbh would be removed. Any diameter size conifer within the dripline of the aspen or riparian hardwood may be removed. White fir would be preferentially targeted for removal over other shade intolerant conifer species such as ponderosa pine. Conifers would be thinned in a manner that creates a gradual transition between the aspen or riparian hardwood treatment areas and the surrounding upland conifer stands.

Some conifers would be retained in aspen and riparian hardwood areas at densities up to 40 square feet of basal area to increase structural diversity. Conifers would be retained using the

following indicators: conifers greater than or equal to 30-inch dbh, fire tolerant species, proximity to old stumps/snags/or logs, where they do not impede the growth of aspen or riparian hardwoods and would provide future coarse woody debris input to streams. Some conifers may be selected for retention to help reduce the potential for windthrow and sunscald. All snags would be retained within these areas, within the limits of safety and operability. Large diameter snags, greater than 15 inches dbh, would be left on site where they are cut for safety.

Dry season mechanical treatment and whole tree yarding would be used where damage to soils and effects to water quality is minimized. In areas without access for mechanical equipment conifers up to 12 inches dbh would be removed by hand. In sensitive areas, on steep slopes, or in areas without access for mechanical equipment, hand thinning and hand piling would be used. Non-merchantable material may be chipped, masticated, lopped and scattered or piled and burned. Piles would be placed outside of the aspen or hardwood root zone, generally 25 feet from the nearest stem.

Where fuels objectives are not met, follow-up treatments may include slash removal via piling and burning outside of the aspen or riparian root zone. When possible, broadcast burning may be used following conifer removal to stimulate new growth within the aspen stand and reduce surface fuels.

Maintenance treatments of any variety described in this section may be implemented in the future to preserve or return the project area to desired conditions

Invasive Species Management

Approximately 12 acres and 27 infestations of nine invasive plant species known to occur in the Five Creeks project area would be treated using a combination of chemical and mechanical (i.e., hand pull, string trimmer, shovel) methods. Table 4 summarizes the known occurrences and the proposed treatment. Herbicide would be spot sprayed using a backpack sprayer with a maximum application of one initial and one follow-up herbicide treatment annually.

Table 4: Current inventory of priority invasive plant infestations in the project area and preferred treatment methods

Species	# of infestations	Acres	Mechanical	Aminopyralid (0.11 lbs ae/ac)	Glyphosate (3 lbs ae/ac)	Chlorsulfuron (0.12 lbs ae/ac)
Tall white top	3	1.8	Prior to Chemical		x	x
Spotted knapweed	6	1.6	If infestation is small	x		
Reed canary grass	1	1.7			x	
Russian knapweed	1	0.7	If infestation is small	x		
Musk thistle	2	0.2	If infestation is small	x		
Scotch thistle	1	0.1		x		
Common Tansy	2	0.2		x	x	x
Toadflax	1	0.1			x	
Cheatgrass	9	5.9		x	x	
Total	27	12.2				

Note: All numbers are approximate. Additional infestations may be discovered and prioritized for treatment; therefore, treatment locations may change as infestations emerge or expand. All changes to treatment locations would be reviewed by an interdisciplinary team.

In general, the Forest Service would act to prevent new infestations and assign highest priority to existing infestations that are the fastest growing, most disruptive, and affect the most highly valued resources. Control of future infestation would occur only when careful consideration indicates that leaving an invasive plant infestation unchecked would result in more damage than controlling it with available methods. Up to 8 acres may be treated annual where new infestations are found or where continued treatment of existing known occurrences in necessary.

Roads Management

A combination of existing system routes, existing non-system routes and construction of new routes would be used to implement the proposed actions and facilitate forest product removal safely and effectively. Road maintenance would be performed as needed on system roads. Existing non system routes may require reconstruction or improvements for use during project implementation. All temporary routes would be decommissioned upon project completion. Table 5 provides an estimation of roads management actions.

Table 5: Roads Management proposed actions, refer to Transportation Map in Appendix A.

Existing	Miles	Action
Existing ML1 Road decommission	2	Decommission
New Road construction (ML1)	Less than 1	Add to system as ML1 road
Existing temporary roads	6	Decommission
*Existing roads	20	Reconstruction
	15	Temporary road new construction
*Non system routes	5	Add to the system as ML1 roads.

All values are estimates based on preliminary field surveys.

*miles overlap other categories.

Temporary Road Construction

Approximately 10 miles of previously tilled temporary roads and existing unclassified non-system roads would be used to provide short-term access and facilitate the removal of forest products. After use, these temporary roads would be decommissioned. Decommissioning would include actions to effectively close the road to motorized use, reduce compaction through subsoiling as needed, and pull berms and outslope or recontour the road to disperse water flows. Any structures and/or fill in stream crossings would be removed, and the natural stream channel shape restored. Final configuration would provide ground cover with mulch, slash, pine needles, wood chips or weed-free straw (preferably with materials from the surrounding setting) in amounts adequate to control erosion.

Road Decommissioning

Approximately 2 miles of maintenance level 1 (ML1) roads would be decommissioned after use. Decommissioning may include recontouring subsoiling, removing drainage structures, restoring vegetative cover, blocking access or some combination of these treatments.

New Road Construction

Approximately 4 miles of new 14-foot-wide road would be constructed to provide short-term access to treatment areas and facilitate forest product removal. After use, the road segments would be added to the National Forest Transportation System and be designated as maintenance level 1 and open to administrative use only.

Legacy Road Treatments

Numerous areas affected by past logging would be rehabilitated. This would include improving natural drainage that has been disrupted by past logging through installation of waterbars, recontouring, outslowing, fill removal and placing slash and mulch. To effectively treat areas without road access some legacy roads may be utilized as temporary roads. After implementation these roads would be either decommissioned or brought onto the system meet future resource management need.

References

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- USDA Forest Service. 2000. Noxious Weed Management Strategy, USDA Forest Service, Pacific Southwest Region, Region 5, Vallejo CA. 12 p.
- USDA Forest Service. 2004. Sierra Nevada Forest Plan Amendment (SNFPA), Final Supplemental Environmental Impact Statement and Record of Decision. Pacific Southwest Region, Forest Service, Vallejo, CA. Online at <http://www.fs.fed.us/r5/snfpa/final-seis/index.html>
- USDA Forest Service. 2019. Conservation Strategy for the California spotted owl (*Strix occidentalis occidentalis*) in the Sierra Nevada. Publication R5-TP-043.

Appendix A – Maps

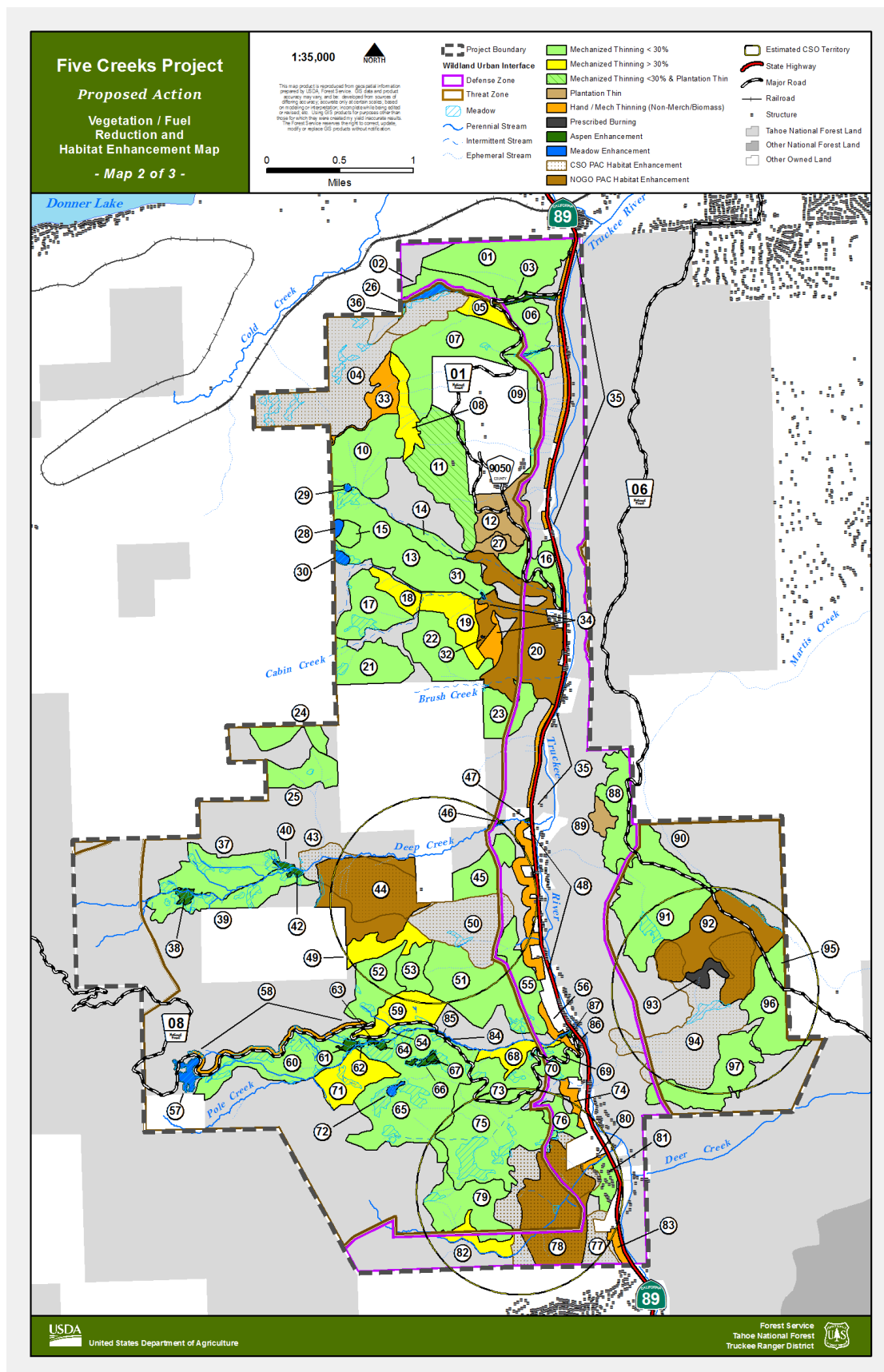


Figure 4: Map of the Five Creeks vegetation proposed actions.



Appendix B – Forest Plan Amendments¹

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
California Spotted Owl and Northern Goshawk PAC Desired Conditions, Management Intent and Management Objectives: Stands in each PAC have: (1) at least two tree canopy layers; (2) dominant and co-dominant trees with average diameters of at least 24 inches dbh; (3) at least 60 to 70 percent canopy cover; (4) some very large snags (greater than 45 inches dbh); and (5) snag and down woody material levels that are higher than average.	pg. 37, pg. 38, and pg. 45, Table 1	Desired Condition	<p>Replace with:</p> <p><u>CSO PACs:</u> Protected activity centers provide high quality nesting and roosting habitat that contributes to successful reproduction of California spotted owls. Protected activity centers encompass habitat essential for nesting and roosting as follows: The habitat has a high canopy cover (including large clumps of more than 70 percent canopy cover), with multiple layers of tree canopy, and many large trees, very large trees, and snags (including some trees and snags greater than 45 inches in diameter). [Large trees are defined as those equal or greater than 30 inches diameter at breast height. Very large trees are defined as those equal or greater than 36 inches diameter at breast height.] Basal area and tree density tend toward the upper end of the range the site can support based on site productivity.</p> <p><u>NOGO PACs:</u> Northern goshawk protected activity centers provide high quality habitat conditions that support nesting and successful reproduction, including dense canopy cover with large trees, multiple layers of tree canopy, and old forest characteristics.</p>	Desired Condition
California Spotted Owl and Northern Goshawk PAC Desired Conditions, Management Intent and Management Objectives: Avoid vegetation and fuels management activities within PACs to the greatest extent feasible. Reduce hazardous fuels in PACs in defense zones when they create an unacceptable fire threat to communities. Where PACs cannot be avoided in the strategic placement of treatments, ensure effective treatment of	pg. 45, Table 1	Management Objective	<p>Replace with:</p> <p>Within protected activity centers, design all treatments to minimize near-term impacts to reproductive California spotted owls, reproductive northern goshawks, and known nest sites, and maintain and promote the <u>highest quality nesting and roosting habitat</u> while considering opportunities to increase resilience of the PAC to severe disturbances. If surveys indicate that the protected activity center is occupied by a pair and</p>	Potential Management Approach

¹ Proposed amendments related to California spotted owl plan components are based on the *Conservation Strategy for the California Spotted Owl in the Sierra Nevada* (USDA Forest Service 2019).

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
<p>surface, ladder, and crown fuels within treated areas. If nesting or foraging habitat in PACs is mechanically treated, mitigate by adding acreage to the PAC equivalent to the treated acreage wherever possible. Add adjacent acres of comparable quality wherever possible.</p>			<p>highest quality nesting and roosting habitat is lacking, design treatments to maintain or improve the <u>best available nesting and roosting habitat</u> in the PAC.</p> <p><u>Highest quality nesting and roosting habitat</u> is defined by areas that include all of the following characteristics:</p> <ul style="list-style-type: none"> a. Forests within CWHR classes 6, 5D, 5M; b. Trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater and including many large/tall trees (greater than 30 inches dbh and/or 150 feet tall) and some very large trees; c. High (greater than 60 percent) or moderately high (50 to 59 percent) canopy cover with areas greater than 70 percent d. Two or more tree canopy layers; and e. Contains some very large snags greater than 45 inches in diameter and snags and down woody material levels on the high end of the range described in terrestrial vegetation desired conditions for the forest type. <p><u>Best available nesting and roosting habitat</u> may be important where highest quality nesting and roosting habitat is unavailable or scarce because the best available habitat may be providing conditions that support current California spotted owl or northern goshawk reproduction, in the absence of higher quality habitat. Components a through c are the most critical components, particularly the very large remnant trees described in a.</p>	

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
			<ul style="list-style-type: none"> a. If there are limited areas of CWHR classes 6, 5D, 5M, include best available areas of 4D or 4M with very large remnant trees; b. Trees in the dominant and co-dominant crown classes averaging 24 inches diameter or greater and including some large trees; c. High (greater than 60 percent) or moderately high (50 to 59 percent) canopy cover, including hardwoods, or moderate canopy cover (40-49 percent) in trees greater than 24 inches dbh where higher canopy cover is not available; d. Two or more tree canopy layers; and e. Contains some very large snags greater than 45 inches in diameter as well as medium to large snags and down woody material. 	
California Spotted Owl Protected Activity Centers (PAC) Designation: PACs are maintained regardless of California spotted owl occupancy status. However, after a stand replacing event, evaluate habitat conditions within a 1.5-mile radius around the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5-mile radius, the PAC may be removed from the network.	pg. 37	Land Allocation	<p>Replace with:</p> <p>Existing protected activity centers may not be retired unless loss of suitable habitat or long-term lack of occupancy criteria are met as defined in the 2019 Conservation Strategy for the California Spotted Owl in the Sierra Nevada, or more current guidance for the Pacific Southwest Region.</p>	Standard
N/A	N/A	N/A	<p>Add:</p> <p><i>All management activities in PACs must maintain or improve habitat quality in the highest quality nesting and roosting habitat. Management activities that maintain or improve habitat quality in the highest quality and best available nesting and roosting habitat would:</i></p>	Standard

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
			<p>a) <i>Retain existing CWHR canopy cover class (e.g. do not reduce 5D to 5M);</i></p> <p>b) <i>Retain clumps of the largest available trees greater than 24 inches DBH; and</i></p> <p>c) <i>Retain at least two canopy layers at the stand scale in areas where large trees occur.</i></p> <p><i>Where necessary to increase long-term resilience, vegetation treatments that may reduce near-term habitat quality may be authorized in up to 100 acres outside of the highest quality nesting and roosting habitat.</i></p> <p><i>Throughout protected activity centers all vegetation treatments must:</i></p> <ul style="list-style-type: none"> <i>Retain the largest/oldest trees, known nest trees, and other large trees and snags with cavities, deformities, broken tops, or other habitat features of value to old forest species;</i> <i>Retain connected areas of moderate (at least 40 percent) and high (at least 60 percent) canopy cover between the known nest site (if nest site is not known, use the most recent known roost site) and areas in the rest of the protected activity center;</i> <i>Avoid mechanical treatments within a 10-acre area surrounding the most recent known nest;</i> <i>Avoid creating new landings, new temporary roads, or canopy gaps larger than 0.25 acres;</i> <i>Increase the quadratic mean diameter of trees at the protected activity center scale; and</i> <i>Maintain the average canopy cover of the protected activity center above 50 percent.</i> <p>Exceptions:</p>	

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
			In Five Creeks wildland urban intermix (WUI) defense zones this standard may be modified as necessary to meet public and firefighter safety and fire hazard reduction objectives consistent with the guideline below.	
N/A	N/A	N/A	<p>Add:</p> <p>To reduce impacts on nesting, roosting, and foraging habitat, where California spotted owl or northern goshawk PACs overlap with WUI defense zones, thinning treatments should:</p> <ul style="list-style-type: none"> • Avoid the 10-acres surrounding the most recent known nest site; • Avoid existing highest quality nesting and roosting habitat where possible.; and • Maintain at least 40% overstory canopy cover and 10% understory cover, whenever fuels and fire behavior objectives can be met with this level of vegetation retention. <p>To limit fragmentation and maintain connectivity of nesting, roosting, and foraging habitat, construction of fuelbreaks should avoid intersecting with California spotted owl or northern goshawk protected activity centers. Where avoiding overlap with a protected activity center is not feasible, creation of a fuelbreak should:</p> <ul style="list-style-type: none"> • Avoid the 10-acres surrounding the most recent known nest site; • Avoid existing highest quality nesting and roosting habitat unless on a ridgetop.; and • Maintain at least 40% overstory canopy cover and 10% understory cover in shaded fuel breaks, whenever fuels and fire behavior objectives can be met with this level of vegetation retention. 	Guideline
N/A	N/A	N/A	<p>Add:</p> <p>When practical based on existing conditions, use prescribed fire, alone or in combination with mechanical thinning, to reduce</p>	Potential Management Approach

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
			surface and ladder fuels and enhance resiliency to severe disturbances within California spotted owl and northern goshawk protected activity centers.	
S&G 7. Within California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.	Pg. 50, 51	Standard and Guideline	Replace with: Manage California spotted owl territories to foster development of high-quality habitat and habitat connectivity <ul style="list-style-type: none"> ◆ 1) Within territories, retain patches of large/tall trees (more than 48 meters [approximately 160 feet]) with high canopy cover (more than 70 percent), both inside and outside of PACs, for developing future nesting sites. ◆ 2) Promote habitat connectivity at the watershed scale by retaining connected areas of moderate and high canopy cover in large/tall trees within territories. ◆ 3) Increase resiliency for territories at the watershed scale by reducing tree density of smaller trees that are prohibiting growth of larger trees. Thinning treatments within territories should be designed to minimize the loss of and to recruit large and very large trees and snags (at least 24 inches and at least 36 inches dbh, respectively). 	Guideline
S&G 7. Mechanical Thinning Treatments: ... Within California spotted owl PACs, where treatment is necessary, remove only material needed to meet project fuels objectives. Focus on removal of surface and ladder fuels.	Pg. 51	Standard and Guideline	Replace with: To minimize impacts to overstory canopy and provide conditions for continued use for nesting and roosting within protected activity centers, reduce fuel loads with thinning and/or prescribed fire to minimize the risk of high-severity fire and promote conditions that lead to lower intensity predicted fire effects (generally flame lengths averaging 4 to 6 feet).	Guideline

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
S&G 7 (cont.). Mechanical Thinning Treatments: ...Within California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.		Standard and Guideline	<p>Replace with:</p> <p>To facilitate development of future nest sites, when conducting vegetation treatments in California spotted owl territories:</p> <ul style="list-style-type: none"> Promote growth of trees greater than 24 inches dbh and especially large trees greater than 30 inches dbh, and Retain clumps or groups of trees greater than 24 inches dbh/100 feet tall, and especially trees greater than 30 inches dbh/150 feet tall, with canopy cover greater than 60 to 70 percent 	
<p>S&G 71. When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.</p> <ul style="list-style-type: none"> lowest contribution to productivity: PACs presently unoccupied and historically occupied by territorial singles only. PACs presently unoccupied and historically occupied by pairs, PACs presently occupied by territorial singles, PACs presently occupied by pairs, highest contribution to productivity: PACs currently or historically reproductive. <p>Historical occupancy is considered occupancy since 1990. Current occupancy is based on surveys consistent with survey protocol (March 1992) in the last 2-3 years prior to project planning. These dates were chosen to encompass the majority of survey efforts and to include breeding pulses in the early 1990s when many sites were found to be productive.</p>	Pg. 60	Standard and Guideline	<p>Replace with:</p> <p>To minimize potential impacts to California spotted owl or northern goshawk reproductive success, vegetation treatments that may reduce habitat quality in the near term should be avoided in protected activity centers with the highest likely contribution to reproductive success, and otherwise prioritized as follows (from highest to lowest priority for treatment).</p> <ol style="list-style-type: none"> Currently unoccupied and historically occupied by territorial singles only. Currently unoccupied and historically occupied by pairs. Currently occupied by territorial singles. Currently occupied by pairs. Currently occupied by pairs and currently or recently reproductive. <p>Exception:</p> <p>This guideline does not apply in the Five Creeks Project WUI defense zones.</p>	Guideline
S&G 71 (cont.). When designing treatment unit intersections with PACs, limit treatment acres to those necessary to achieve strategic placement objectives and avoid treatments adjacent to nest stands whenever possible. If	Pg. 60	Standard and Guideline	Remove this portion of S&G 71.	N/A

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
nesting or foraging habitat in PACs is mechanically treated, mitigate by adding acreage to the PAC equivalent to the treated acres using adjacent acres of comparable quality wherever possible.				
S&G 72. Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.	Pg. 60	Standard and Guideline	Remove S&G 72.	N/A
S&G 73. While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, <u>they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC.</u> Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.	Pg. 60	Standard and Guideline	Remove S&G 73.	N/A
S&G 74. In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.	Pg. 60	Standard and Guideline	Remove S&G 74.	N/A

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
S&G 80. For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.	Pg. 61	Standard and Guideline	Remove S&G 80.	N/A
S&G 81. For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.	Pg. 61	Standard and Guideline	Remove S&G 81.	N/A
California Spotted Owl Home Range Core Areas (HRCAs) Designation. A home range core area is established surrounding each territorial spotted owl activity center detected after 1986.	Pg. 39	Land Allocation	Replace with: California Spotted Owl Territory Designation. Territory size is approximately 1,000 acres including the 300-acre PAC. Territories would be mapped as a circular core around an activity center, as defined in the 2019 Conservation Strategy for the California Spotted Owl in the Sierra Nevada, or more current guidance for the Pacific Southwest Region. Territory boundaries may be adjusted to be noncircular, as needed, to include the most sustainable areas of high-quality habitat and exclude areas less likely to support suitable habitat.	Standard
California Spotted Owl Home Range Core Areas (HRCAs) Desired Conditions. HRCAs consist of large habitat blocks that have: (1) at least two tree canopy layers; (2) at least 24 inches dbh in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches dbh) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material.	Pg. 40	Desired Condition	Replace with: California Spotted Owl Territory Desired Conditions. When present, treatments would maintain and promote the highest quality nesting and roosting habitat while considering opportunities to increase resilience. Maintain and promote 40 to 60 percent of a territory in mature tree size classes with moderate and high canopy cover for nesting, roosting and foraging. This corresponds to roughly the following CWHR size/density classes in descending order of priority: 6, 5D, 5M, 4D, and 4M. Those territories in more mesic conditions and at higher elevations within the watershed should contain relatively more of this habitat than those in drier conditions and at lower elevations. The remainder of the	Desired Condition

Existing Forest Plan Direction	SNFPA ROD reference	Existing Plan Component Type	Proposed Forest Plan Amendment	Amended Plan Component Type
			territory should represent a diversity of many different structure and canopy cover classes. 1) When occupied territories do not meet the desired conditions described above, retain the existing large tree moderate/high canopy cover habitat (for example, CWHR 6, 5D, 5M) wherever it exists throughout the territory.	
California Spotted Owl Home Range Core Areas (HRCAs) Management Intent. Treat fuels using a landscape approach for strategically placing area treatments to modify fire behavior. Retain existing suitable habitat, recognizing that habitat within treated areas may be modified to meet fuels objectives. Accelerate development of currently unsuitable habitat (in non-habitat inclusions, such as plantations) into suitable condition. Arrange treatment patterns and design treatment prescriptions to avoid the highest quality habitat (CWHR types 5M, 5D, and 6) wherever possible.	Pg. 46, Table 1	Management Intent	Replace with: California Spotted Owl Territories Management Intent. Vegetation treatments in CSO territories should be designed to improve resiliency and long-term sustainability of nesting, roosting, and foraging habitat.	